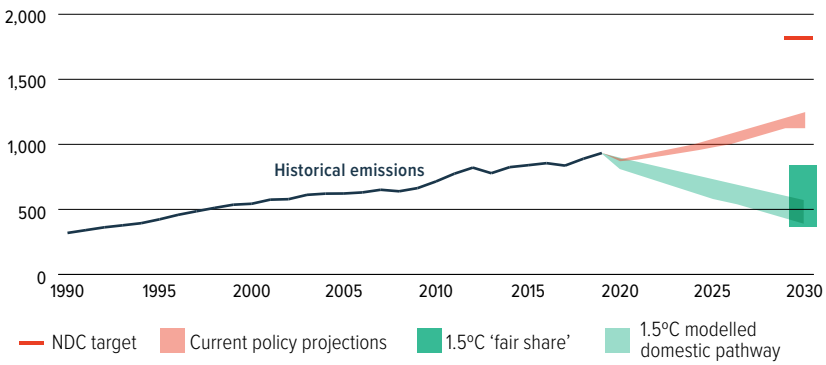
INDONESIA

Climate Transparency

CLIMATE TRANSPARENCY REPORT: COMPARING G20 CLIMATE ACTION **2022**

NOT ON TRACK FOR A 1.5°C WORLD

1.5°C compatible emissions pathway ($MtCO_2e$/year)[1]

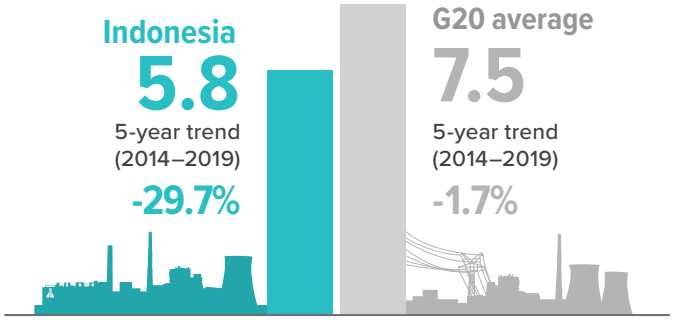


Indonesia's unconditional NDC target would increase emissions to 421% above 1990 levels, or approximately 1,661 $MtCO_2e$, by 2030. To keep below the 1.5°C temperature limit, analysis by the 1.5°C Pathways Explorer shows that the country's emissions would need to be around 449 $MtCO_2e$ by 2030, leaving an ambition gap of about 1,212 $MtCO_2e$ (excl. LULUCF). To be 1.5°C 'fair share' compatible, Indonesia would need to substantially strengthen its unconditional target.

Climate Action Tracker, 2022a; 2022b; Climate Analytics, 2022; Gütschow et al., 2021

PER CAPITA GREENHOUSE GAS (GHG) EMISSIONS BELOW G20 AVERAGE

tCO_2e/capita[2] in 2019



Indonesia's per capita emissions are 0.78 times the G20 average. Total emissions per capita have decreased by 29.7% from 2014 to 2019.

Gütschow et al., 2021; World Bank, 2022

RECENT DEVELOPMENTS

At COP26, Indonesia signed a voluntary pledge on phasing out coal to be operationalised in two phases: retiring some coal power plants by 2031, with further plant retirements between 2036–2040. Final coal power plant retirement should take place between 2051–2060. International financial support is key to achieving these commitments.

Despite pledging to phase out coal, there is no clear roadmap and, conversely, the 2021–2030 National Electricity Plan maintains Indonesia's reliance on coal power, while a ban on coal exports has been lifted.

Indonesia submitted its Long-Term Strategy for Low Carbon and Climate Resilience (LTS-LCCR) in July 2021, with a target of achieving net zero by 2060 or sooner, brought forward from its previously announced target year of 2070.

KEY OPPORTUNITIES FOR ENHANCING CLIMATE AMBITION

Indonesia's National Development Planning Agency **produced a net zero by 2045** pathway which could be more economically and socially beneficial than the current official net zero by 2060 target.

The energy sector's high carbon intensity continues to increase. After forestry, energy is the second largest GHG emitting sector, so it is crucial that Indonesia develop an ambitious energy policy to reduce emissions.

The transport sector accounts for 33% of final energy consumption, and 95% of this demand is met through oil. **Strong policies to decarbonise the transport sector would help Indonesia achieve its net zero target**.

Contents

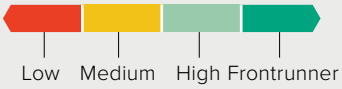
We unpack Indonesia's progress and highlight key opportunities to enhance climate action across:

Legend

Trends show developments over the past five years for which data are available. A red exclamation mark indicates negative trends from a climate protection perspective.

Decarbonisation Ratings[3] assess a country's performance compared to other G20 Members. A high score reflects a relatively good effort from a climate protection perspective but is not necessarily 1.5°C compatible.

Policy Ratings[4] evaluate a selection of policies that are essential pre-conditions for the longer-term transformation required to meet the 1.5°C limit.



SOCIO-ECONOMIC CONTEXT

Human Development Index

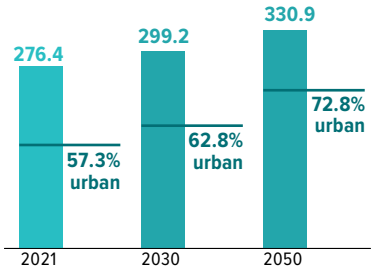
The Human Development Index (HDI) reflects life expectancy, level of education, and per capita income. Indonesia ranks high.

0.72 high

Data for 2019. UNDP, 2020

Population and urbanisation projections

(in millions)

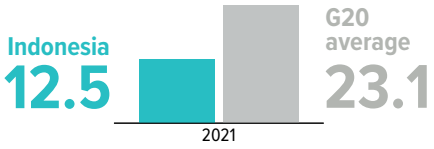


Indonesia's population is projected to increase by 20% by 2050, and become more urbanised. An increase in Indonesia's urban population is exacerbating existing problems of traffic congestion, air pollution and water pollution.

United Nations, 2018; World Bank, 2022

Gross Domestic Product (GDP) per capita

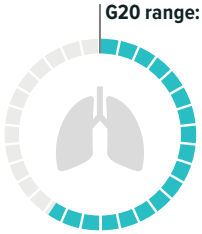
(thousand PPP constant 2015 international $ per person) in 2021



World Bank, 2021

Death rate attributable to ambient air pollution

(death rate per 1,000 population per year, age standardised) in 2019



0.99 per 1,000 people per year

Over 168,300 people died in Indonesia in 2019 due to stroke, heart disease, lung cancer and chronic respiratory diseases as a result of outdoor air pollution. This is one of the highest levels in the G20.

Institute for Health Metrics and Evaluation, 2020

A JUST TRANSITION

Indonesia is a signatory to the Silesia Declaration on Just Transition (COP24). Although the declaration underlines the importance of the socio-economic aspect of a low-carbon transition, Indonesia's policies and actions are misaligned with this goal. It also signed a pledge at COP26 (2021) to phase out coal power by the 2040s, and given that the coal industry plays a huge role in Indonesia's economy and directly employs approximately 100,000 people, Indonesia should use this as opportunity to implement a just transition, and ensure livelihoods are protected. Facilitating a just transition for those associated with the coal mining sector and ensuring alternative sources of economic growth in coal-dependent regions will be crucial. To facilitate a just energy transition, the government could diversify the economy to prioritise investment in the clean energy sector, engage in social dialogue to ensure an inclusive transition, and implement carefully designed early mitigation actions.

IESR, 2020; IISD, 2022b

ADAPTATION

Paris Agreement: Increase the ability to adapt to the adverse effects of climate change and foster climate resilience and low-GHG development.

The livelihoods of Jakarta's poorer and marginalised people are threatened by **one of the highest rates of flooding from inland rain and river floods**.

With over 95,000 km of coastline, Indonesia is particularly vulnerable to sea-level rise and saltwater intrusion, which impacts freshwater availability and agricultural production. Coastal flooding is estimated to cost USD 12–66bn by 2050.

Rice is a staple food of Indonesia. Agricultural production, particularly rice production, is **vulnerable to the changing wet cycle and higher temperatures impacting food security**.

ADAPTATION NEEDS

Impacts of a changing climate

Exposure to warming

0.7°C Higher

Between 2017 to 2021, the average summer temperatures experienced by people in Indonesia were 0.7°C higher than the 1986–2005 average global mean temperature increase of 0.3°C.

Changes in the ability to work due to exposure to excessive heat

5.1bn Labour hours lost

25% increase

In 2021, heat exposure in Indonesia led to the loss of 5.1 billion potential labour hours, a 25% increase from 1990–1999.

Loss of earnings from heat-related labour capacity reduction

18.3bn Loss in labour capacity (USD)

1.59% of GDP

Extreme heat can make it unbearable or even dangerous to work in a range of economically important sectors. The potential income loss in 2021 – in the service industry, manufacturing, agriculture, and construction sectors – from labour capacity reduction due to extreme heat was USD 18.3bn, or 1.59% of GDP.

Romanello et al., 2022; World Meteorological Organization, 2022

Exposure to future impacts at 1.5°C warming and higher

Different levels of global warming are projected to have a wide range of impacts of varying severity across the world. The percentages at 1.5°C are calculated as an increase/decrease from the reference period of 1986–2006. Using the projected impacts at 1.5°C of warming as a reference, we compare impacts that may occur at higher levels of warming.

Climatic	**At 2°C**	**At 2.5°C**	**At 3°C**
Local **precipitation**: +1.2% at 1.5°C warming	2.3 times	6.1 times	7.1 times

In Indonesia, local precipitation is projected to increase by 1.2% above the reference period's average temperatures, if global temperature rises by up to 1.5°C. More warming is projected to increase precipitation by up to 7 times in a 3°C warming scenario. Average rainfall is increasing in Indonesia with considerable variability in spatial distribution. Southern parts of Indonesia are experiencing variation in annual precipitation with increases in precipitation during the wet season, whereas northern regions are also experiencing precipitation during the dry season. Variability by elevation is also observed with high altitude areas receiving higher rainfall compared to the lowland areas.

Fresh water	**At 2°C**	**At 2.5°C**	**At 3°C**
Surface run-off: +5.2% at 1.5°C warming	1.8 times	3.6 times	4.4 times
River discharge: +5% at 1.5°C warming	1.6 times	2.7 times	3.6 times
Total **soil moisture content:** -0.3% at 1.5°C warming	0.8 times	0.5 times	0.4 times

The percentage of surface run-off and river discharge is projected to increase by 5.2% and 5%, respectively, above the reference period average, if global temperature rises by up to 1.5°C. This increase of surface run-off and river discharge would be 4.4 times and 3.6 times greater, respectively, at 3°C of warming. Under 1.5°C of warming, total soil moisture content would decrease by 0.3% from that of the reference period, but less as the temperature increases.

Agriculture	At 2°C	At 2.5°C	At 3°C
Reduction in **maize yield**: -6.2% at 1.5°C warming	1.3 times	1.5 times	2.4 times

Agricultural yields tend to decrease as the temperature increases. Indonesia's maize yield is expected to decrease by 6.2% of the yields during the reference period at 1.5°C of warming. This loss would be 2.4 times greater at 3°C of warming. Rice is a staple food in Indonesia, and its production is very vulnerable to changes in the wet cycle. Several projections hold that yields in the highland areas of Indonesia are expected to rise in future compared to yields in the lowlands.

Hazards	At 2°C	At 2.5°C	At 3°C
Number of people annually exposed to **heatwaves:** 20.7 million at 1.5°C warming	1.7 times	2.9 times	4.7 times
Number of people annually exposed to **crop failures**: 117,501 at 1.5°C warming	2.1 times	4.9 times	10.1 times
Number of people annually exposed to **wildfires:** 70,465 at 1.5°C warming	0.3 times	1.2 times	2.9 times

Indonesia is one of the countries most vulnerable to extreme heatwaves. The number of people annually exposed to heatwaves is projected to be 20.7 million more than the 1986–2006 average, at 1.5°C of warming, and 4.7 times that number of people would be exposed at 3°C. With unpredictable wet cycles and increased incidence of extreme weather events, farmers are likely to experience increasing crop failures leading to over 100,000 more people being exposed annually to crop failure at 1.5°C of warming, than the people exposed annually during the reference period, and 10 times that many people at 3°C. Persistent drought and drier summers are increasing forest fires. More than 70,000 additional people are exposed annually to forest fires at 1.5°C of warming; 3 times greater at 3°C.

Economic	At 2°C	At 2.5°C	At 3°C
Annual expected damage from **tropical cyclones** -3.8% at 1.5°C warming	2.6 times	4.6 times	6.4 times
Annual expected damage from **river flood:** +8.8% at 1.5°C warming	4.7 times	13.7 times	21.3 times
Labour productivity due to heat stress: -5.6% at 1.5°C warming	1.5 times	2 times	2.5 times

As an archipelago of islands, Indonesia is highly exposed to tropical cyclones, which are projected to become more intense as waters warm in both the Indian Ocean and Pacific Ocean. Indonesia is also highly exposed to flooding. The annual expected damage from tropical cyclones and river flooding at 3°C is 6.4 times and 21 times higher, respectively, than the damage at 1.5°C. As extreme heat events increase, so does the number of people vulnerable to it. Indonesia's labour productivity is projected to decline by 5.6% from the average in the reference period, under 1.5°C of warming; a decrease that would double at 2.5°C of warming leading to ever more people at risk of lowered income.

For further assessments of impacts under different warming scenarios, and a detailed explanation of the methodology, go to https://climate-impact-explorer.climateanalytics.org

Climate Analytics, 2021

ADAPTATION POLICIES

National Adaptation Strategies

Document name	Publication year	Fields of action (sectors)												Monitoring & evaluation process
		Agriculture	Biodiversity	Coastal areas and fishing	Education and research	Energy and industry	Finance and insurance	Forestry	Health	Infrastructure	Tourism	Transport	Urbanism	Water	
National Action Plan on Climate Change Adaptation (RAN-API)	2019	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	Monitoring done by related line Ministries and periodically reported to the Minister of National Development Planning

Nationally Determined Contribution (NDC): Adaptation

TARGETS

Reduce impacts of climate change on national GDP loss by 3.45% in 2050. Additionally, Indonesia aims to achieve emissions peak and net sink in forestry and land use in 2030.

ACTIONS

Actions specified in agriculture, energy, water, forestry, health, infrastructure, and biodiversity/ecosystems sectors.

MITIGATION

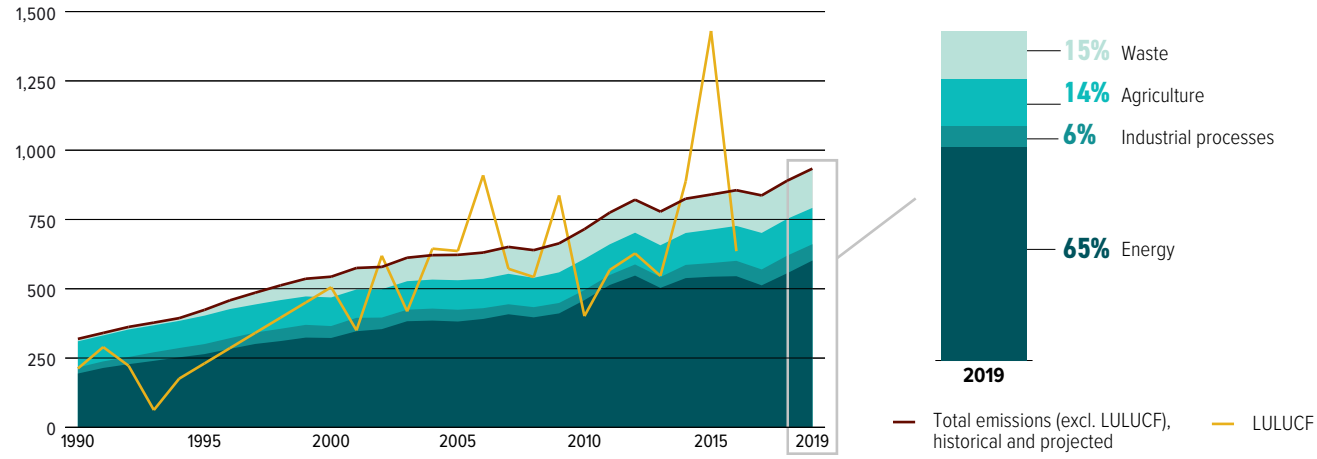
Paris Agreement: Hold the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit to 1.5°C, recognising that this would significantly reduce the risks and impacts of climate change.

EMISSIONS OVERVIEW

Indonesia's **total greenhouse gas emissions (excl. LULUCF) have increased by 193% (1990–2019)**. In the same period, its total methane emissions (excl. LULUCF) have increased by 180%.

GHG emissions across sectors[5]

Total sectoral GHG emissions ($MtCO_2e$/year)

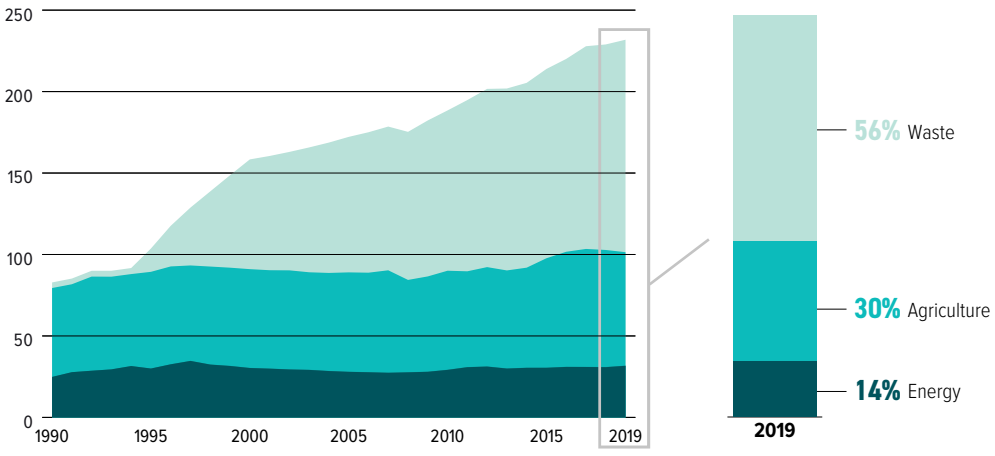


Indonesia's emissions (excl. LULUCF) increased by 193% between 1990–2019 to 933 $MtCO_2e$/yr. Emissions growth was seen in all categories over this timeframe, with emissions from energy fluctuating between 59% and 67% of the total. From a low of 6 $MtCO_2e$ in 1990, in 1998 emissions from waste overtook those from industrial processes, and then in 2013, overtook agriculture to become the second largest contributor of GHG emissions.

Gütschow et al., 2021

Methane emissions by sector

Total CH_4 emissions ($MtCO_2e$/year)



Indonesia signed the Global Methane Pledge at COP26 in November 2021.

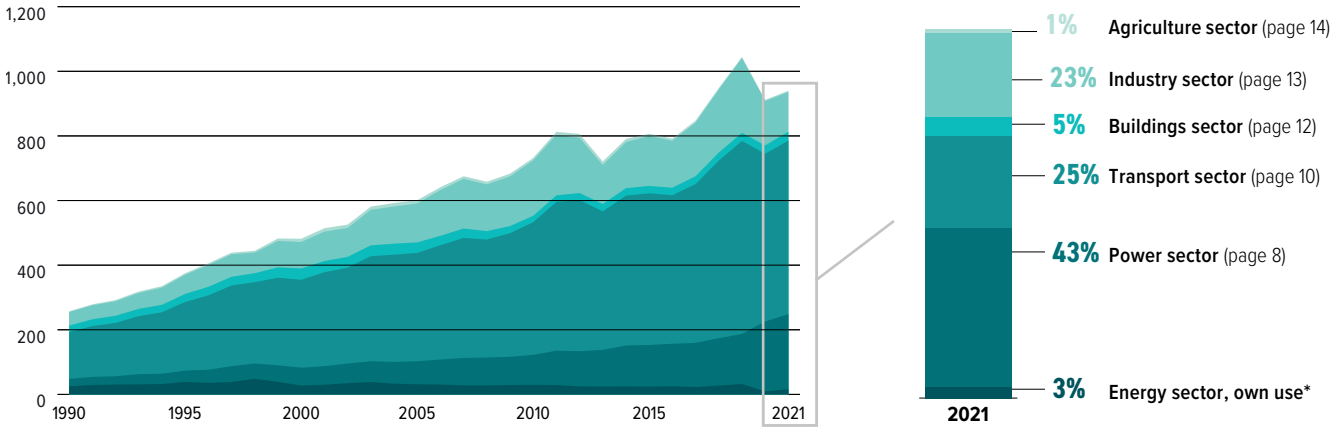
Participating countries pledged to undertake voluntary actions to contribute to a collective reduction of global methane emissions by at least 30% from 2020 levels by 2030. Further scrutiny of plans and implementation will be required.

Methane is a potent, though short-lived greenhouse gas, accounting for an estimated third of global warming. Indonesia's methane emissions (excl. LULUCF) increased by 180% between 1990 and 2019 to 232 $MtCO_2e$/yr. Emissions of methane have increased in all sectors since 1990, but most noticeably in the waste sector which has increased by 3,703%. While the majority of Indonesia's methane emissions came from the waste sector in 2019, this is a significant change from 1990, when the energy and agriculture sectors produced far more emissions than did the waste sector.

Climate and Clean Air Coalition, 2021; Gütschow et al., 2021

Energy-related CO_2 emissions by sector

Annual CO_2 emissions ($MtCO_2$/year)

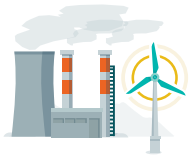


The largest driver of overall greenhouse gas emissions are CO_2 emissions from fuel combustion. Emissions have been increasing since 1990, with a slight decrease in 2020 – likely due to COVID-19 response measures – but rebounded in 2021 as the economy recovered. At 43%, the power sector is the largest contributor to CO_2 emissions, followed by the transport and industry sectors at 25% and 23%, respectively.

Enerdata, 2022

**Includes energy-related CO_2 emissions from extracting and processing fossil fuels.*

ENERGY OVERVIEW



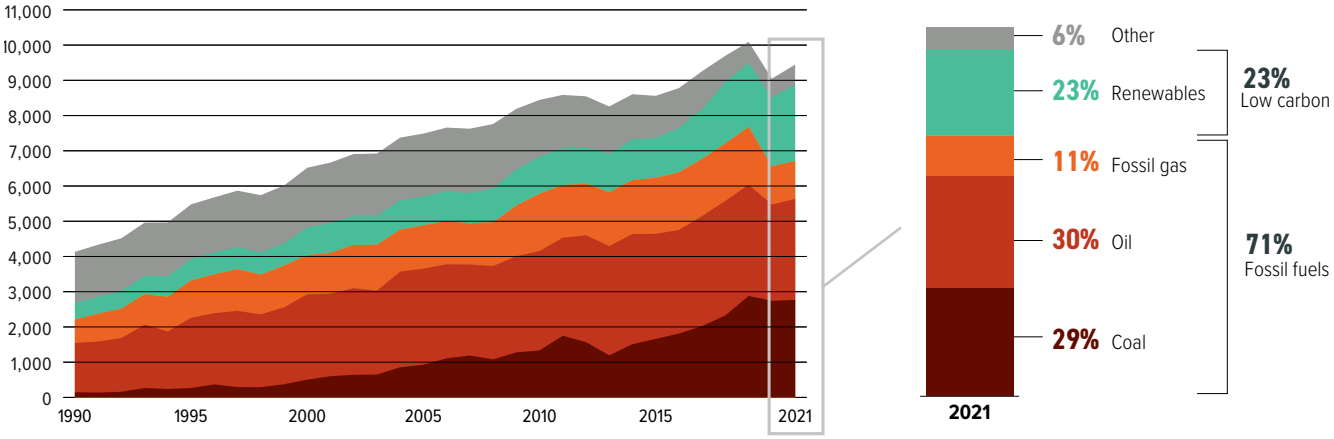
Indonesia is the world's fourth-largest coal producer and largest exporter (455m tonnes in 2019), as well as exporting fossil gas and biofuels. **Its energy mix is dominated by fossil fuels, while renewables made up a small share of total primary energy mix in 2021.**

The share of fossil fuels globally needs to fall to 67% of global total primary energy by 2030 and to 33% by 2050, and to substantially lower levels without carbon capture and storage.

Rogelj et al., 2018

Energy mix

Total primary energy supply (PJ)



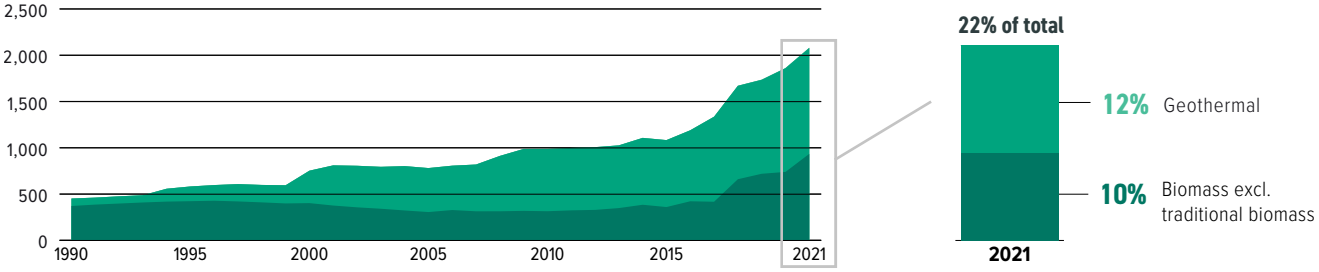
Fossil fuels (oil, coal, and gas) make up 71% of Indonesia's energy mix, lower than the G20 average of 81%. The share of renewable energy (excl. traditional biomass) has continually increased since 2011. Note that this graph shows the final fuel mix for all energy supply, and includes energy used for electricity generation, heating and cooling, and also for transport fuels.

Enerdata, 2022

The official Handbook of Energy and Economy Statistics of Indonesia uses a different methodology and, therefore, presents slightly different totals.

Solar, wind, geothermal and biomass development

As a share of total primary energy supply (TPES) (PJ)

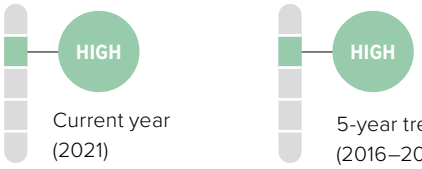


Solar, wind, geothermal and biomass, excluding traditional biomass, account for 22% of Indonesia's energy supply – the G20 average is 7.5%. The share in total energy supply has increased by around 62.7% in the last 5 years in Indonesia (2016–2021).

Enerdata, 2022

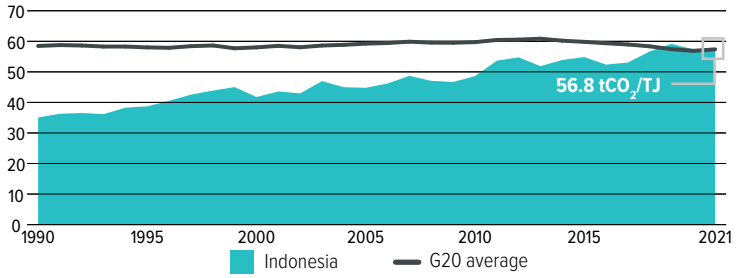
Note: Large hydropower and solid fuel biomass in residential use are not reflected due to their negative environmental and social impacts.

Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members

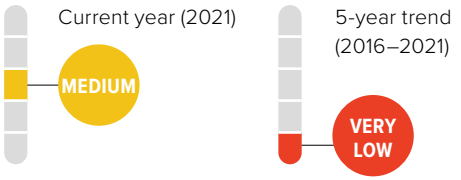


Carbon intensity of the energy sector

Tonnes of CO_2 per unit of TPES (tCO_2/TJ)



Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members

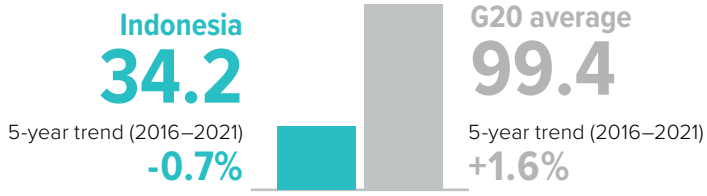


Carbon intensity is a measure of how much CO_2 is emitted per unit of energy supply. The carbon intensity of Indonesia's energy sector has steadily increased since 1990 and, in the last 5 years, it has increased by 10% whereas the G20 average carbon intensity decreased by 4%. Overall, this reflects the continued dominance of coal, oil and gas (71%) in the energy mix.

Enerdata, 2022

Energy supply per capita

TPES per capita (GJ/capita) in 2021

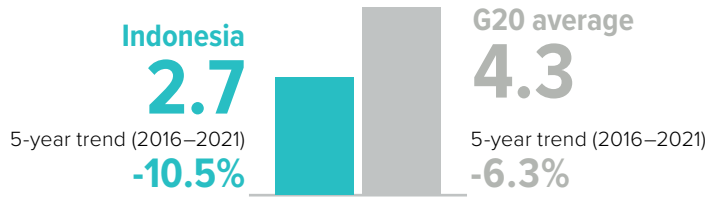


The level of energy supply per capita is closely related to economic development, climatic conditions and the price of energy. Energy supply per capita in Indonesia is, with 34 GJ in 2021, well below the G20 average of 99 GJ, and supply decreased faster between 2016–2021 (0.7%) than the G20 average increase of 1.65% over the same period.

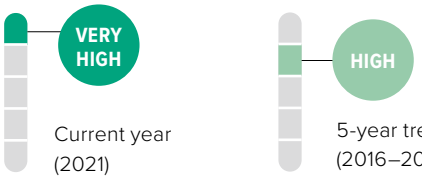
Enerdata, 2022; World Bank, 2022

Energy intensity of the economy

(TJ/million US$2015 GDP) in 2021



Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members



This indicator quantifies how much energy is used for each unit of GDP. This is closely related to the level of decarbonisation, efficiency achievements, climatic conditions or geography. Indonesia's energy intensity is lower than the G20 average and has been decreasing faster, at 10.5% (2016–2021), than the G20.

Enerdata, 2022; World Bank, 2021

POWER SECTOR

Emissions from energy used to make electricity and heat

Indonesia's power sector is dominated by fossil fuels (81%) and produced 62% of its electricity from coal in 2021. While decarbonisation is included in the LTS-LCCR 2050, the objectives are not ambitious and implementation planning is lacking.

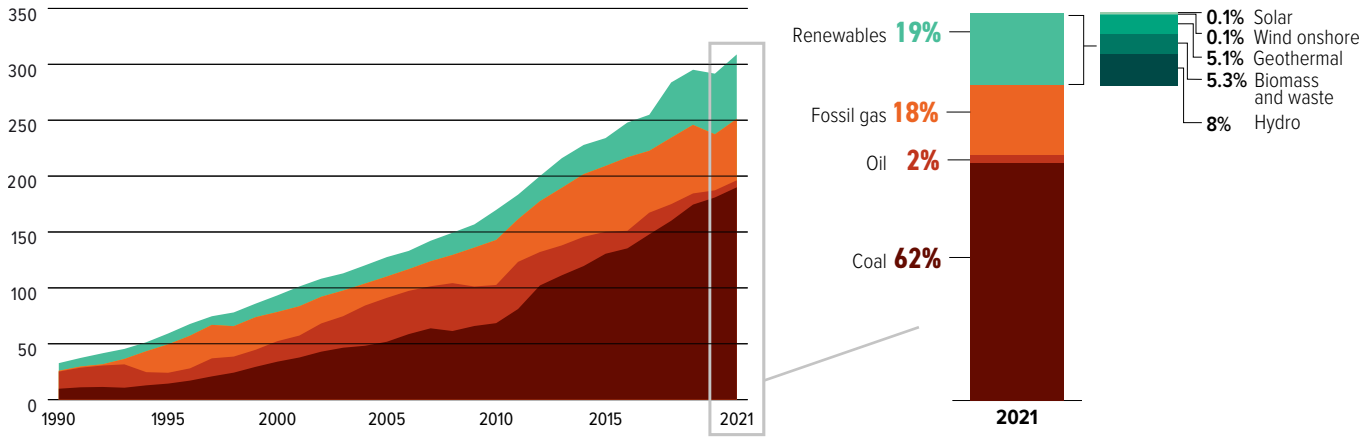
Power generation's share of energy-related CO_2 emissions in 2021: **43%** Direct

Worldwide, coal use for power generation needs to peak by 2020, and between 2030 and 2040, all the regions of the world need to phase out coal-fired power generation. By 2040, the share of renewable energy in electricity generation has to be increased to at least 75%, and the share of unabated coal reduced to zero.

Climate Action Tracker, 2020; Rogelj et al., 2018

Electricity generation mix

Gross power generation (TWh)



Indonesia generated 81% of its electricity from fossil fuels in 2021. The share of renewable energy in the power sector has been increasing, accounting for approximately 19% of the power mix in 2021. The major sources of renewable electricity are hydro (8%), biomass (5%), and geothermal (5%). Despite a recent rapid increase, solar and wind still play a marginal role in the electricity generation mix.

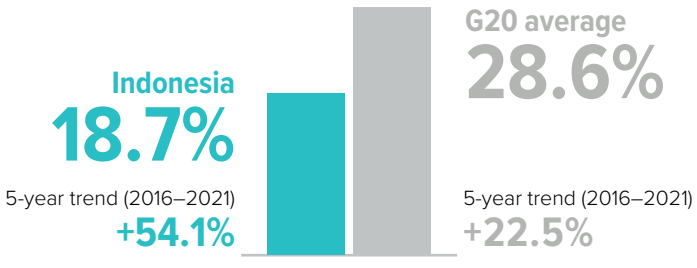
Note that this graph shows data for wind, solar, large and small hydro, geothermal and biomass (except "traditional biomass"), as well as associated electricity and heat and, as such, may differ from the Indonesian Handbook of Energy and Economy Statistics.

Enerdata, 2022

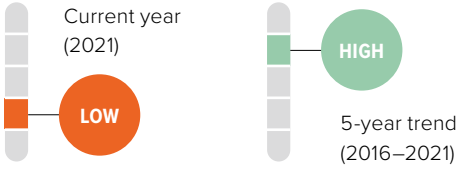
The official Handbook of Energy and Economy Statistics of Indonesia uses a different methodology and, therefore, presents slightly different totals.

Share of renewables in power generation

(incl. large hydro) in 2021



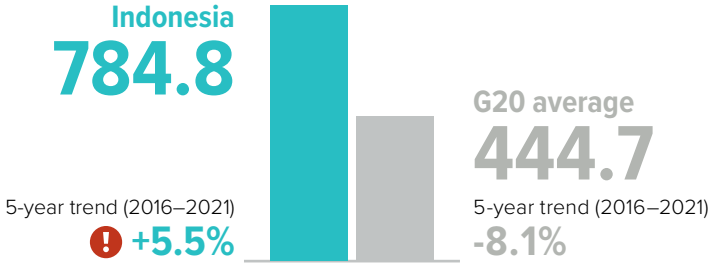
Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members



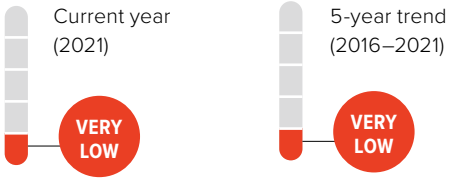
Enerdata, 2022

Emissions intensity of the power sector

(gCO_2/kWh) in 2021



Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members

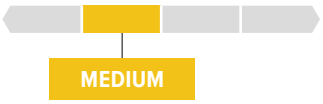


For each kilowatt hour of electricity, 784.8 g of CO_2 are emitted in Indonesia. The power sector is still dominated by coal (62%).

Enerdata, 2022

POLICY ASSESSMENT

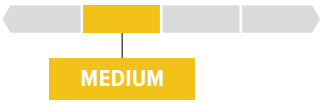
Renewable energy in the power sector



The Electricity Supply Business Plan (Rencana Usaha Penyediaan Tenaga Listrik or RUPTL) 2021–2030 set out an updated renewable energy target of 51.6% by 2030, a significant increase on the 30% increase for the sector previously planned. There is inadequate investment to accelerate renewables, nor a regulatory framework to engage the important private investment required. Indonesian energy policy still favours fossil fuel energy, keeping domestic coal prices artificially low and, therefore, making it difficult for renewables to compete.

Asia Society Policy Institute, 2022; IEA, 2021b; IISD, 2022a; IRENA, 2017

Coal phase-out in the power sector



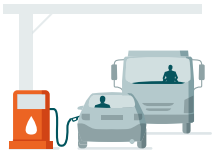
Indonesia aims for carbon neutrality by 2060. At COP26, Indonesia signed the Global Coal to Clean Power Transition statement, committing to work toward a coal phase-out by 2040, conditional on international financial and technical support.

Recent policy developments, however, send mixed signals, with promises to decommission some coal plants, while also outlining plans to add more coal capacity. In November 2021, as a part of the "Friends of Indonesia Renewable Energy" (FIRE) programme, the Indonesian government announced plans to decommission 9.2 GW of coal capacity by 2030 – a far more ambitious target than that of the state-owned power enterprise (PT PLN) of 1.1 GW. In contrast, however, according to the national electricity plan, the government is planning to add 13.8 GW of coal capacity between 2021–2030 which includes the completion of a 35 GW capacity building programme that was initiated in 2015. If this comes to fruition, Indonesia will see a net gain of coal-powered capacity.

D-Insights, 2021; Enerdata, 2021; IISD, 2022b; Jong, 2021a; Ministry of Energy and Mineral Resources, 2021

TRANSPORT SECTOR

Emissions from energy used to transport goods and people



In 2021, GHG emissions from transport began to rebound after the slump produced by 2020's COVID response measures. Oil continues to dominate the transport energy mix. Given the growth of sales of fossil-fuel-powered motorcycles and cars, and a tiny percentage of electric vehicle (EV) sales, accelerating the decarbonisation of the sector is necessary to decrease GHG emissions.

Transport's share of energy-related CO_2 emissions in 2021:

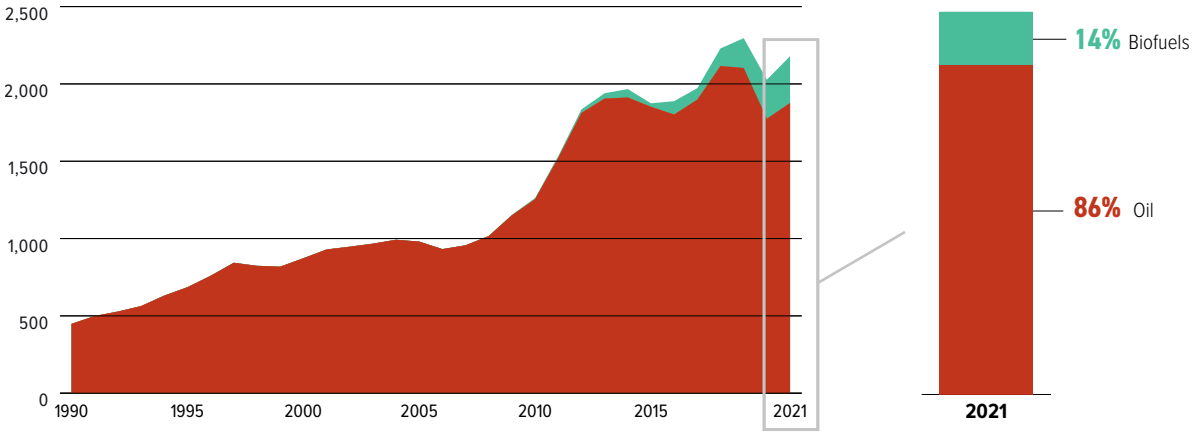
24.9% Direct **0.1%** Indirect

The share of low-carbon fuels in the transport fuel mix must increase to between 40% and 60% by 2040 and 70% to 95% by 2050.

Climate Action Tracker, 2020; Rogelj et al., 2018

Transport energy mix

Final energy consumption by source (PJ/year)

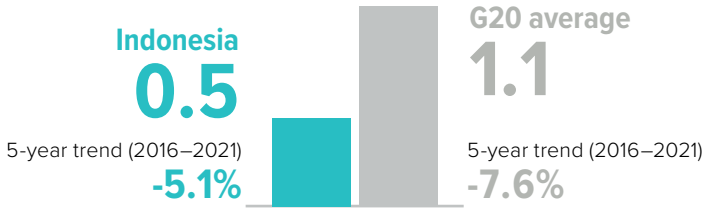


Electricity and biofuels make up only 14% of the energy mix in transport.

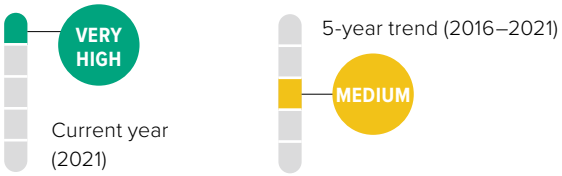
Enerdata, 2022

Transport emissions per capita

(excl. aviation) (tCO_2/capita) in 2021



Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members

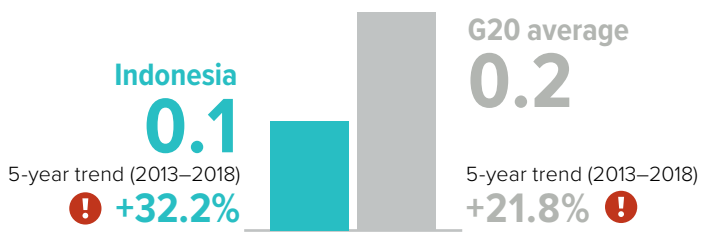


Per capita emissions in 2021 and the 5-year trend have been impacted by COVID-19 pandemic response measures and resulting economic slowdowns. For a discussion of broader trends in the G20 and the rebound of transport emissions in 2022, please see the Highlights Report at www.climate-transparency.org

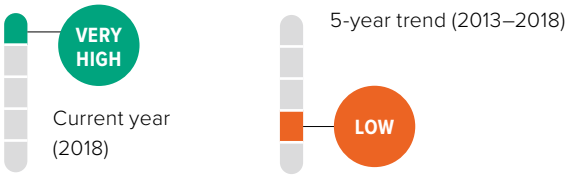
Enerdata, 2022; World Bank, 2022

Aviation emissions per capita[6]

(tCO_2/capita) in 2018



Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members



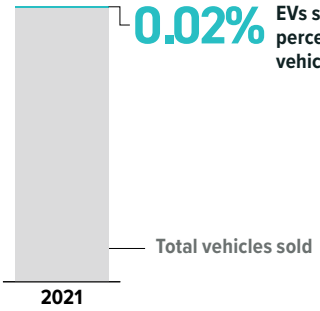
Enerdata, 2022; IEA, 2021a; World Bank, 2022

Motorisation rate

64
vehicles per 1,000 inhabitants in 2019

Enerdata, 2022

Market share of electric vehicles in new car sales (%)*



Indonesia Investment Coordinating Board, 2021

**These data are not necessarily comparable with data from other G20 Members*

Modal split passenger transport

(% of passenger-trips): road, rail and air

No data available for Indonesia

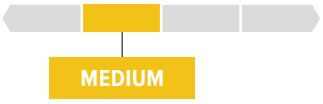
Modal split freight transport

(modal split in % of tonne-km)

No data available for Indonesia

POLICY ASSESSMENT

Phase out fossil fuel cars



The Electric Vehicles Development Plan and General Plan of National Energy, published in 2017, projects that 2,200 electric, 700,000 hybrid cars and 2 million electric two-wheelers will be on the road by 2025. EV sales growth in Indonesia is still, however, very low – 0.02% of total vehicle sales – and the high upfront cost is one of the main reasons. Government is providing various tax incentive to both the general public and EV manufacturers. The National Energy Grand Strategy for 2020–2040 has put forward a cumulative target of 2 million EV and 13 million electric two-wheeler uptake by 2030. The achievement of these goals would be greatly facilitated by an integrated target and clear roadmap for the institutions tasked with overseeing the development of Indonesian EVs. Indonesia has a biofuel blending mandate of 30%. Palm oil is the main biofuel in use, so the increased blending mandate could lead to an increase in deforestation and peat land destruction.

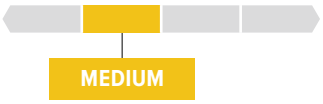
AHK Indonesien, 2019; Bloomberg, 2022; BKMP, 2020; Climate Policy Database, 2021; ICCT, 2017, 2021; Saputra and Simanjuntak, 2021

Phase out fossil fuel heavy-duty vehicles

The country is now implementing Euro 4/IV-equivalent emissions standards for heavy-duty vehicles (HDVs). These standards have been applied to all diesel vehicles, including HDVs, since the beginning of 2021. There are still no plans to phase out fossil fuel HDVs.

TransportPolicy.net, 2021

Modal shift in (ground) transport

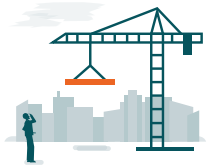


Indonesia's National Vision for Non-Motorised Transport plans and prioritises the needs of pedestrians and cyclists in urban areas. The Sustainable Urban Transport Programme, establishes pilot projects around transport demand management measures in some cities, building sidewalks and bicycle networks and financing local governments. Mass urban transport is part of Indonesia's urban infrastructure development, and includes Transjakarta, the world's longest Bus Rapid Transit system, operating since 2001 and still expanding.

ITDP, 2019; ITDP and UNEP, 2020; NAMA Facility, 2018; Rahman, 2021

BUILDINGS SECTOR

Emissions from energy used to build, heat and cool buildings



Direct emissions and indirect emissions from the buildings sector in Indonesia account for 4.6% and 24.5% of total energy-related CO_2 emissions, respectively. Per capita emissions from the buildings sector are less than half the G20 average.

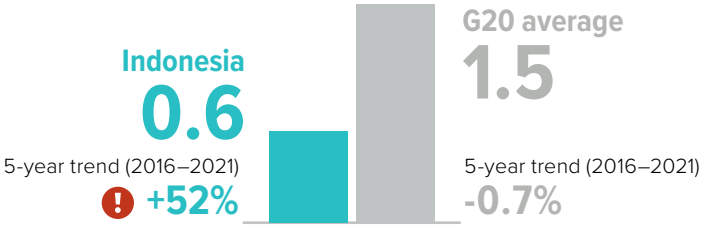
Buildings sector's share of energy-related CO_2 emissions in 2021: **4.6%** Direct **24.5%** Indirect

By 2040, global emissions from buildings need to be reduced by 90% from 2015 levels, and be 95–100% below 2015 levels by 2050, mostly through increased efficiency, reduced energy demand and electrification in conjunction with complete decarbonisation of the power sector.

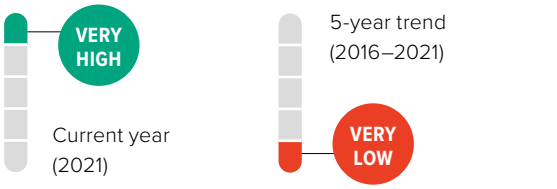
Climate Action Tracker, 2020; Rogelj et al., 2018

Buildings sector emissions per capita

incl. indirect emissions (tCO_2/capita) in 2021



Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members

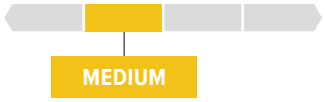


Buildings emissions occur directly (burning fuels for heating, cooking, etc) and indirectly (from grid-electricity for air conditioning, appliances, etc.). Buildings-related emissions per capita are under half the G20 average as of 2021, but in contrast to the slightly declining G20 average, Indonesia's per capita building emissions increased by 52% (2016–2021), from a very low base.

Enerdata, 2022; World Bank, 2022

POLICY ASSESSMENT

Near zero energy new buildings



Indonesia has green building standards (commercial and residential) and several regulations related to green building. The National Energy Efficiency Standard for Building, updated in 2020, covers energy conservation in the building envelope, air conditioning, lighting system and energy audit procedure, but is only being implemented in four cities, including Jakarta.

Green Buildings Council Indonesia has developed Net Zero Healthy School guidelines. Pilot projects to develop low carbon apartments with active and passive design taking into account hot and humid conditions, are being planned. Rating tools to classify other net zero buildings are also being piloted.

Global Buildings Performance Network, 2021; IEA, 2022; Subhan, 2018

Renovation of existing buildings

The Ministry of Public Works and Housing released Ministerial Regulation No. 21/2021 in March 2021 on Performance Assessment of Green Building.

Specific details regarding renovations are not yet available, but it is understood that debris and material management and restoration of the environment at sites are likely to be among the assessment criteria.

INDUSTRY SECTOR

Emissions from energy use in industry

Direct emissions and indirect emissions from industry in Indonesia make up 23% and 15.6% of energy-related CO_2 emissions, respectively. Even though some programmes have been implemented, Indonesia lacks effective policies to increase energy efficiency or to reduce emissions and decarbonise the sector.

Industrial emissions need to be reduced by 65–90% from 2010 levels by 2050.

Rogelj et al., 2018

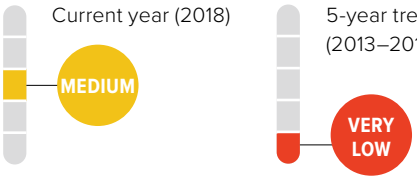
Industry sector's share of energy-related CO_2 emissions in 2021:

22.9% Direct **15.6%** Indirect

Industry emissions intensity[7]

(kgCO_2e/USD2015 GVA) in 2018

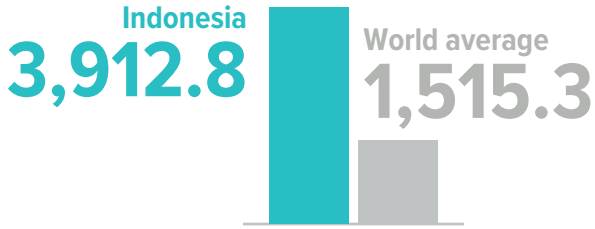
Decarbonisation: a high rating indicates more effort to decarbonise compared to other G20 Members



Enerdata, 2021; World Bank, 2022

Carbon intensity of steel production[8]

(kgCO_2/tonne product) in 2019

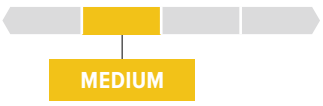


Steel production and steel-making are significant GHG emissions sources, and challenging to decarbonise.

Enerdata, 2022; World Steel Association, 2021

POLICY ASSESSMENT

Energy efficiency



The manufacturing sector accounts for 20% of national GDP and has highest share of primary energy demand. Energy efficiency improvements in this sector contributed around 90% of Indonesia's total energy efficiency savings between 2010–2018, due to the introduction of mandatory reporting of energy consumption for high industrial energy users above 6,000 toe/pa. These users also had to appoint an energy manager, develop an energy conservation plan, and perform an energy audit.

Indonesia's Ministry of Industry has designed a "Making Indonesia 4.0" roadmap to achieve higher efficiency in industry.

ABB-Energy Efficiency Movement, 2021; BKPM, 2019; IEA, 2021c; Setyawan, 2020

LAND USE SECTOR

Emissions from land use change and forestry

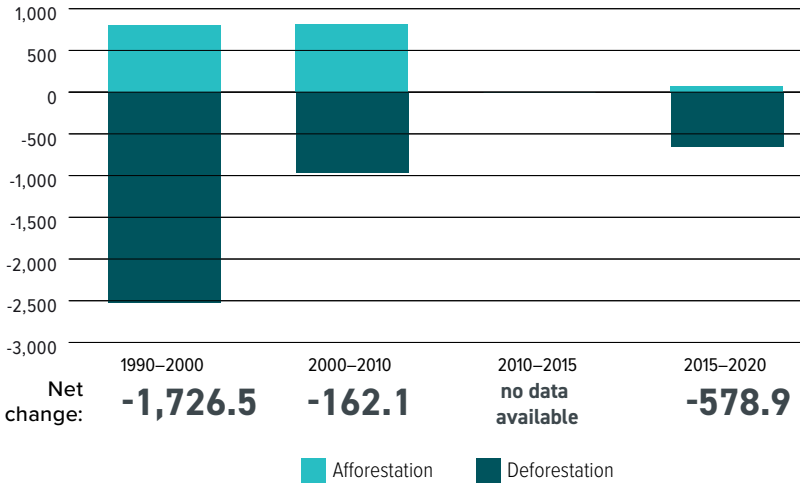
Indonesia is one of the world's largest emitters of greenhouse gases from the land sector, mainly due to deforestation for agriculture (particularly to make way for high-value palm oil) and from peat and forest fires. To stay within the 1.5°C limit, Indonesia needs to make the land use and forestry sector a net sink of emissions.

Global deforestation needs to be halted and changed to net CO_2 removals by around 2030.

Rogelj et al., 2018

Annual forest expansion, deforestation and net change

Forest area change in 1,000 ha/year

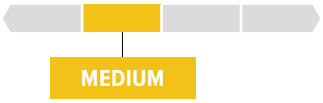


Indonesia's tropical rainforests are the third largest in the world, nearly half of which are primary forests. The total area of mangrove forest in Indonesia is estimated at 3.2 mha, about 20% of the world's total mangrove forest area. Unfortunately, the rate of primary forest loss is one of the highest in the tropics. Between 2015–2020, Indonesia lost 579 kha of forest area per year.

Global Forest Assessment, 2020

POLICY ASSESSMENT

Target for net zero deforestation



Indonesia signed the pledge to end deforestation by 2030 during COP26, but later withdrew over definitional issues, pledging instead only to "halt and reverse forest loss and land degradation by 2030". This watered-down pledge is in the LTS-LCCR as part of a 'carbon neutrality by 2060' target that necessitates that this sector be a net sink.

Current policies are not conducive to a decline of emissions from this sector: only 4% of the target under the ban on land clearing was met between 2011–2018. The government has scrapped source verification requirements for timber exporters, thus allowing large-scale clearing of protected forest areas for agri-business and other land use change. Peatland protection currently only covers 30% of carbon-rich peat land, leaving the rest vulnerable to destruction to make way for commodity plantations.

Jong, 2019; 2020a, 2020b, 2021b, 2022

AGRICULTURE SECTOR

Emissions from agriculture

Indonesia's agricultural emissions are mainly from rice cultivation, enteric fermentation and livestock manure. A 1.5°C compatible pathway requires improvements in rice production, and dietary improvements for livestock.

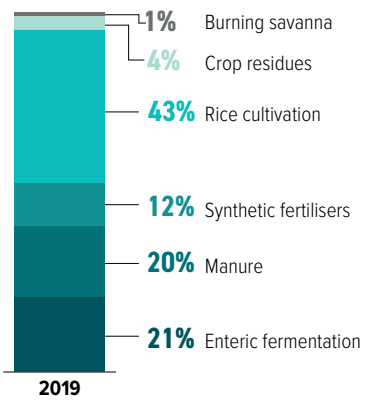
Methane emissions need to decline by 10% by 2030 and by 35% by 2050 (from 2010 levels). Nitrous oxide emissions (mainly from fertilisers and manure) need to be reduced by 10% by 2030 and by 20% by 2050 (from 2010 levels).

Rogelj et al., 2018

Emissions from agriculture

excluding energy emissions, in 2019

146.3
$MtCO_2e$ in 2019



In Indonesia, the largest sources of GHG emissions in the agriculture sector are rice cultivation (43%), digestive processes of cattle (21%) and livestock manure (20%). Alternative irrigation systems, use of organic fertiliser, and improved fertiliser application as well as reductions in food waste, could help reduce emissions from this sector.

The FAO has altered the categorisation of emissions from drained organic soils/cultivation of organic soils to include a land-use-change component that might not have been included in last year's indicator; therefore, these emissions have been omitted.

FAO, 2022

MITIGATION: TARGETS AND AMBITION

The science from the IPCC on the risks of exceeding 1.5°C warming is clear. The UN science body has projected that to keep the 1.5°C goal alive, the world needs to roughly halve emissions by 2030.

However, despite the Glasgow Climate Pact (1/CMA.3) agreement to "revisit and strengthen" 2030 targets this year, progress on more ambitious targets has stalled. Without far more ambitious government action, the world is heading to a warming of **2.4°C with the current 2030 targets** and even higher warming **of 2.7°C with current policies**.

Climate Action Tracker, 2021a, 2022c; IPCC, 2022; UNFCCC, 2021

AMBITION: 2030 TARGETS

Nationally Determined Contribution: Mitigation

TARGETS

The Enhanced NDC increases the unconditional emission reduction target to 32% (up from 29%) below its BAU, and its conditional NDC from 41% to 43% by 2030 with international support.

ACTIONS

Actions specified in the following sectors: land use and forestry, agriculture, energy, waste

Climate Action Tracker (CAT) evaluation of targets and actions

Critically insufficient	**Highly insufficient**	Insufficient	Almost sufficient	1.5°C Paris Agreement compatible

The CAT evaluates and rates several elements of climate action: policies and actions, targets and a country's contribution to climate finance (where relevant) and combines these into an overall rating. The "highly insufficient" rating indicates that Indonesia's climate policies and commitments lead to rising, rather than falling, emissions and are not at all consistent with the Paris Agreement's 1.5°C temperature limit.

Both Indonesia's unconditional and conditional NDC targets are rated "critically insufficient", meaning the targets are inconsistent with Indonesia's fair share contribution and modelled domestic pathways. Indonesia will by far overachieve its NDC targets. The CAT rates Indonesia's policies and actions as "insufficient". These policies and actions still lead to increasing emissions, but at lower levels than the NDC targets. To get a better rating, Indonesia needs to set more ambitious NDC targets and policies. Its unconditional NDC target would need to be brought well below its current policies to result in emissions close to present levels by 2030, and policies increased to bend the emission curve. To reduce further emissions, its conditional NDC needs to be well below present levels in 2030 and would require significant international support to drive deep decarbonisation in line with recent net zero analyses.

This is the evaluation from November 2021. Unfortunately the updated analysis was not available at time of publication. Please check the CAT website in early November 2022 for the update.

For the full assessment of the country's targets and actions, and the explication of the methodology, see www.climateactiontracker.org

Climate Action Tracker, 2022a

AMBITION: LONG-TERM STRATEGIES

The Paris Agreement invites countries to communicate mid-century, long-term, and low-GHG emissions development strategies. Long-term strategies are an essential component of the transition toward net zero emissions and climate-resilient economies.

Status	Submitted to UNFCCC, last update in 2021
Net zero target	Yes, in 2060 or earlier
Interim steps	32% below its business-as-usual (BAU)
Sectoral targets	Yes

FINANCE

Paris Agreement: Make finance flows consistent with a pathway towards low-GHG emissions and climate-resilient development.

In 2020, Indonesia spent USD 16bn on fossil fuel subsidies, nearly 45% on petroleum, 24% on coal, and 21% on electricity. Implementation of a carbon tax in Indonesia was deferred due to ongoing disruption in the energy sector globally.

Investment in green energy and infrastructure needs to outweigh fossil fuel investments by 2025.

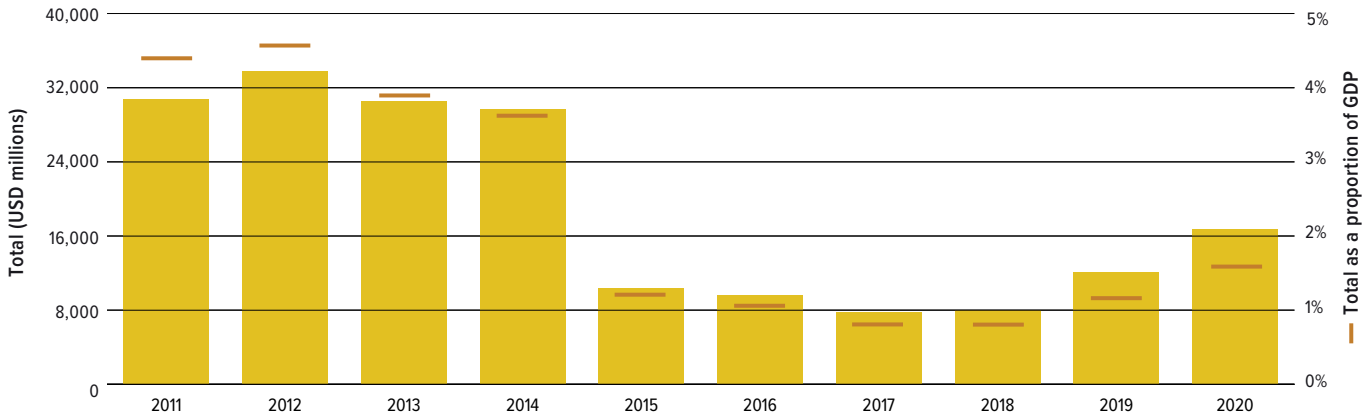
Rogelj et al., 2018

FISCAL POLICY LEVERS

Fiscal policy levers raise public revenues and direct public resources. Critically, they can shift investment decisions and consumer behaviour towards low-carbon, climate-resilient activities by reflecting externalities in the price.

Fossil fuel subsidies relative to national budgets

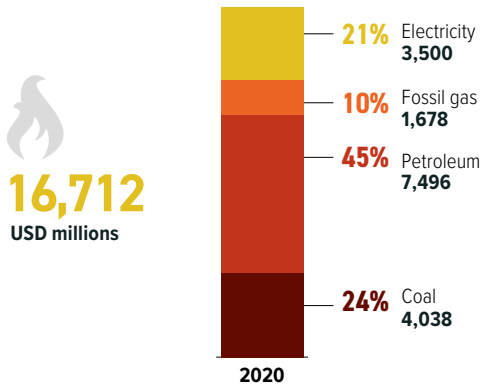
(USD millions)



OECD-IEA Fossil Fuel Support Database, 2022

Fossil fuel subsidies by fuel type

(USD millions) in 2020



Fossil fuel subsidies in Indonesia have risen sharply since 2018 to USD 16.7bn in 2020, after a major drop in 2015 due to successful subsidy reform in 2014. Roughly twice as much support goes to consumption compared to production. In 2020, petroleum received 45% of the subsidies, with coal receiving 24% and electricity generation receiving 21%. Fossil fuel subsidies in Indonesia made up 8% of public spending in 2020.

One of the most significant subsidy measures is for electricity. Since 80% is generated by fossil fuels – 50% coal – across the country, this is primarily a fossil fuel subsidy. It has been reduced slowly since 2014, except for the poorest who still receive the most favourable rates. There was a slight increase in 2020 over 2019. Diesel is similarly subsidised through below-market rates provided by state-owned enterprises and, although the exclusion of motor fuel from this measure led to a steep decline after 2015, the rise in international oil prices has led to a rise since 2019.

In response to the COVID-19 pandemic, the government committed at least USD 6.5bn to the fossil fuel sector through direct transfers to state-owned enterprises in 2020.

Energy Policy Tracker, 2022; OECD-IEA Fossil Fuel Support Database, 2022

Carbon pricing and revenue

Indonesia is due to implement a carbon tax in 2022. The start date was delayed from April 2022 due to turmoil around the energy crisis prompted in large part by the invasion of Ukraine by Russia in February 2022. Amendments to the country's tax law will include a new carbon tax scheme aimed at increasing state revenue from coal-fired power plants. The draft bill has set an initial minimum carbon tax rate of roughly USD 5.25/tCO_2e, and the Finance Ministry has announced the new carbon tax rate of USD 2.1/tCO_2, lower than the initial rate. The tax could be extended to other highly-emitting sectors in 2025. Furthermore, Indonesia is working towards a mandatory domestic Emissions Trading Scheme (ETS) for the power sector as one of the policy mechanisms to help meet its NDC targets, with a pilot phase ongoing since March 2021.

Argus Media, 2021; I4CE, 2022

FINANCIAL POLICY AND REGULATION

Through policy and regulation, governments can overcome challenges to mobilising green finance, including real and perceived risks, insufficient returns on investment, capacity and information gaps.

Indonesia announced its commitment to sustainable finance at the COP26, seeking to boost the supply of and demand for green funds and other sustainable financial instruments, as well as greater supervision and coordination of such instruments. Listed companies in Indonesia must already disclose sustainability reports on environmental and social risk, so adding requirements for climate risk – as in Brazil – could be done before long. In June 2021, the Indonesia Stock Exchange became a supporter of the Task Force on Climate-Related Financial Disclosures (TCFD), a body established in 2015 by the Financial Stability Board to develop climate disclosure recommendations. Becoming a supporter may encourage others to voluntarily follow TCFD recommendations, but it does not imply any commitment.

In January 2022, the Financial Services Authority (OJK) released a first edition of a new Green Taxonomy. This classifies activities based on the Indonesia Standard Industrial Classification (KLBI) but leaves room to add as yet unclassified activities later. The criteria have been divided into a traffic light system, where red signifies 'harmful activities', yellow 'no significant harm' and green 'provide positive impact to the environment'. The aim is to help investors direct finance toward greener activities.

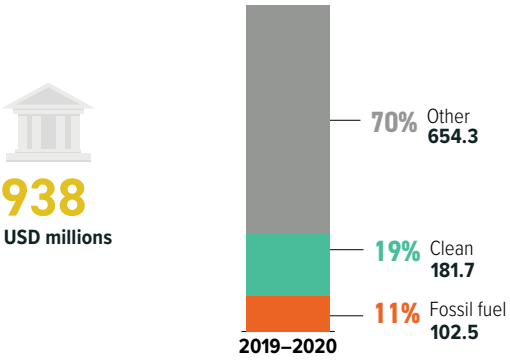
Otoritas Jasa Keuangan, 2021, 2022; Task Force on Climate-Related Financial Disclosures, 2022

PUBLIC FINANCE

Governments steer investments through their public finance institutions, including via development banks both at home and overseas, and green investment banks. Developed G20 Members also have an obligation to provide finance to developing countries, and public sources are a key aspect of these obligations under the UNFCCC.

Public finance for energy

USD millions (2019–2020 average)



Between 2019–2020 Indonesia provided an average of USD 940m in public finance to energy projects. Only 11% of this went to fossil fuels, although that support was exclusively for coal. The government is seeking to improve the National Electrification Ratio, investing USD 910m to provide electricity to 433 villages in eastern Indonesia. Other significant investments include USD 335m in 2020 to develop geothermal renewable energy and USD 324m in 2019 to the Hydropower Programme for central Indonesia.

Oil Change International, 2022

Provision of international public support

Indonesia is not listed in Annex II of the UNFCCC and is not formally obliged to provide climate finance and, therefore, while Indonesia may channel international public finance towards climate change via multilateral and other development banks, it has not been included in this report.

Endnotes

For more detail about sources and methodologies, please download the CTR Technical Note at: www.climate-transparency.org/g20-climate-performance/g20report2022

Where referenced, "Enerdata, 2022" refers to data provided in July 2022 and, due to rounding, graphs may sum to slightly above or below 100%.

1 The '1.5°C compatible pathway' is derived from global cost-effective pathways assessed by the IPCC's SR15, selected based on sustainability criteria, and defined by the 5th–50th percentiles of the distributions of such pathways achieving the long-term temperature goal of the Paris Agreement. Negative emissions from the land sector and novel negative emissions technologies are not included in the assessed models, which consider one primary negative emission technology (BECCS). In addition to domestic 1.5°C compatible emissions pathways, the 'fair share' emissions reduction range would almost always require a developed country to provide enough support through climate finance, or other means of implementation, to bring the total emissions reduction contribution of that country down to the required 'fair share' level.

2 'Land use' emissions is used here to refer to land use, land use change and forestry (LULUCF). The Climate Action Tracker (CAT) derives historical LULUCF emissions from the UNFCCC Common Reporting Format (CRF) data tables, converted to the categories from the IPCC 1996 guidelines, in particular separating Agriculture from LULUCF, which under the IPCC 2006 Guidelines is integrated into Agriculture, Forestry, and Other Land Use (AFOLU).

3 The Decarbonisation Ratings assess the current year and average of the most recent 5 years (where available) to take account of the different starting points of different G20 members.

4 The selection of policies rated and the assessment of 1.5°C compatibility are primarily informed by the Paris Agreement and the IPCC's 2018 SR15. The Policy Assessment Criteria table below displays the criteria used to assess a country's policy performance.

5 In order to maintain comparability across all countries, this report harmonises all data with PRIMAP 2021 dataset to 2018. However, note that CRF data is available for countries which have recently updated GHG inventories.

6 This indicator adds up emissions from domestic aviation and international aviation bunkers in the respective country. In this Country Profile, however, only a radiative forcing factor of 1 is assumed.

7 This indicator includes only direct energy-related emissions and process emissions (Scope 1) but not indirect emissions from electricity.

8 This indicator includes emissions from electricity (Scope 2) as well as direct energy-related emissions and process emissions (Scope 1).

Policy Assessment Criteria

	LOW	MEDIUM	HIGH	FRONTRUNNER
Renewable energy in power sector	No policies to increase the share of renewables	Some policies	Policies and longer-term strategy/ target to significantly increase the share of renewables	Short-term policies + long-term strategy for 100% renewables in the power sector by 2050 in place
Coal phase-out in power sector	No targets and policies in place for reducing coal	Some policies	Policies + coal phase-out decided	Policies + coal phase-out date before 2030 (OECD and EU28) or 2040 (rest of the world)
Phase out fossil fuel cars	No policies for reducing emissions from light-duty vehicles	Some policies (e.g. energy/emissions performance standards or bonus/ malus support)	Policies + national target to phase out fossil fuel light-duty vehicles	Policies + ban on new fossil fuel-based light-duty vehicles by 2035 worldwide
Phase out fossil fuel heavy-duty vehicles	No policies	Some policies (e.g. energy/emissions performance standards or support)	Policies + strategy to reduce absolute emissions from freight transport	Policies + innovation + strategy to phase out emissions from freight transport by 2050
Modal shift in (ground) transport	No policies	Some policies (e.g. support programmes to shift to rail or non-motorised transport)	Policies + longer-term strategy	Policies + longer-term strategy consistent with 1.5°C pathway
Near zero energy new buildings	No policies	Some policies (e.g. building codes, standards or fiscal/financial incentives for low-emissions options)	Policies + national strategy for near zero energy new buildings	Policies + national strategy for all new buildings to be near zero energy by 2020 (OECD countries) or 2025 (non-OECD countries)
Energy efficiency in industry	No policies	Mandatory energy efficiency policies cover more than 26–50% of industrial energy use	Mandatory energy efficiency policies cover 51–100% of industrial energy use	Policies + strategy to reduce industrial emissions by 75–90% from 2010 levels by 2050
Retrofitting existing buildings	No policies	Some policies (e.g. building codes, standards or fiscal/financial incentives for low-emissions options)	Policies + retrofitting strategy	Policies + strategy to achieve deep renovation rates of 5% annually (OECD) or 3% (non-OECD) by 2020
Net zero deforestation	No policies or incentives to reduce deforestation in place	Some policies (e.g. incentives to reduce deforestation or support schemes for afforestation/ reforestation in place)	Policies + national target for reaching net zero deforestation	Policies + national target for reaching zero deforestation by 2020s or for increasing forest coverage

Bibliography

ABB Energy Efficiency Movement. (2021). *Energy Efficient Manufacturing is Key to Indonesia's Sustainable Growth*. https://www.energyefficiencymovement.com

AHK Indonesien. (2019). *Indonesia Issues Legal Framework for Electric Vehicles*. https://indonesien.ahk.de

Argus Media. (2021). *Indonesia Pushes Ahead with Carbon Tax Scheme*. https://www.argusmedia.com

Asia Society Policy Institute (ASPI). (2022). *ASPI Climate Action Brief: Indonesia*. https://asiasociety.org

Bloomberg. (2022). *Indonesia Sticks with Biodiesel Policy Even as Palm Oil Soars*. https://www.bloomberg.com

Climate Action Tracker (CAT). (2020). *Paris Agreement Compatible Sectoral Benchmarks Study*. https://climateactiontracker.org

---. (2021a). *Climate Summit Momentum: Paris Commitments Improved Warming Estimate to 2.4°C*. https://climateactiontracker.org

---. (2022a). *Climate Action Tracker Country Assessments*. https://climateactiontracker.org/countries/

---. (2022b). *CAT Climate Target Update Tracker*. https://climateactiontracker.org/climate-target-update-tracker/

---. (2022c). Despite Glasgow Climate Pact 2030 Climate Target Updates Have Stalled. https://climateactiontracker.org

Climate Analytics. (2021). *Climate Impact Explorer*. http://climate-impact-explorer.climateanalytics.org/

---. (2022). 1.5°C *National Pathways Explorer*. http://1p5ndc-pathways.climateanalytics.org/

Climate and Clean Air Coalition. (2021). *Global Methane Pledge*. https://www.ccacoalition.org/en/resources/global-methane-pledge

Climate Policy Database. (2021). *Electric Vehicle Tax Scheme and Target*. https://www.climatepolicydatabase.org/policies/ev-tax-scheme-and-target

D-Insights. (2021). *Indonesia to Retire 9.2 GW Coal Power Plants by 2030*. https://dinsights.katadata.co.id

Enerdata. (2021). I*ndonesia Plans to Add 13.8 GW of New Coal-Fired Plants Over the Next Decade*. https://www.enerdata.net

---. (2022). *Global Energy and CO_2 Data*. https://www.enerdata.net/research/

Energy Policy Tracker. (2022). G20 Countries. https://www.energypolicytracker.org/region/g20

Food and Agriculture Organization (FAO). (2022). *Emissions Totals: Agriculture*. http://www.fao.org/faostat

Global Buildings Performance Network. (2021). *Net Zero Healthy School Guidelines for Indonesia*. https://www.gbpn.org

Global Forest Resources Assessment. (2020). *Annual Forest Expansion, Deforestation and Net Change Indicator*. Food and Agriculture Organisation. https://fra-data.fao.org/WO/fra2020/forestAreaChange/

Gütschow, J. et al. (2021). *The PRIMAP-hist National Historical Emissions Time Series (1850–2018)*, V.2.2. Zenodo Open Access Repository. https://doi.org/10.5281/zenodo.4479172

Indonesia Investment Coordinating Board. (2021). *Electric Vehicle Brochure*. https://www.bkpm.go.id

Institute for Climate Economics (I4CE). (2022). *Global Carbon Accounts 2021*. https://www.i4ce.org/

Institute for Essential Services Reform (IESR). (2020). *Ensuring a Just Energy Transition: Lessons Learned from Country Case Studies*. https://iesr.or.id

Institute for Health Metrics and Evaluation (IHME). (2020). *Global Burden of Disease Study 2020*. http://ghdx.healthdata.org/gbd-results-tool

Institute for Transportation and Development Policy (ITDP) and United Nations Environment Programme (UNEP). (2020). *National Vision of Non-Motorised Transport Infrastructure*. http://airqualityandmobility.org

ITDP. (2019). *Transjakarta*: *A Study in Success. Institute for Transportation and Development Policy*. https://www.itdp.org/2019/07/15/transjakarta-study-success/

Intergovernmental Panel on Climate Change (IPCC). (2022). *Sixth Assessment Report, WGII Summary for Policymakers. Headline Statements*. https://www.ipcc.ch

International Council on Clean Transportation (ICCT). (2017). *The Hidden Cost of Indonesia's Biodiesel Mandate to Consumers*. https://theicct.org

---. (2021). *Indonesia Transport Electrification Strategy*. https://theicct.org

International Energy Agency (IEA). (2021a). *Aviation*. https://www.iea.org/reports/aviation

---. (2021b). *Data & Statistics – Indonesia*. https://www.iea.org/data-and-statistics/data-browser

---. (2021c). *E4 Country Profile: Energy Efficiency Indonesia – Analysis*. https://www.iea.org

---. (2022). *Roadmap for Energy-Efficient Buildings and Construction in ASEAN*. https://iea.blob.core.windows.net/

International Institute for Sustainable Development (IISD). (2022a). I*ndonesia Must Quadruple its Annual Renewable Investment Target to Reach its Climate Objectives*. https://www.iisd.org

---. (2022b). *Achieving a Just Energy Transition in Indonesia*. https://www.iisd.org

IRENA. (2017). *Renewable Energy Prospect: Indonesia*. https://www.irena.org

Jong, N. (2019). "*Dangerous" New Regulation Puts Indonesia's Carbon-Rich Peatlands at Risk*. https://news.mongabay.com

---. (2020a). *Indonesia Ends Timber Legality Rule, Stoking Fears of Illegal Logging Boom*. https://news.mongabay.com

---. (2020b). *New Rule Puts Indonesia's Protected Forests up for Grabs for Agribusiness*. https://news.mongabay.com

---. (2021a). *Indonesia Says No New Coal Plants from 2023 (after the next 100 or so)*. https://news.mongabay.com

---. (2021b). *Indonesia's Flip-Flop on Zero-Deforestation Pledge Portends Greater Forest Loss*. https://news.mongabay.com

---. (2022). Study: *Indonesia's Forest-Clearing Moratorium Underdelivered – But So Did Donors*. https://news.mongabay.com

Ministry of Energy and Mineral Resources (ESDM). (2021). *Bangun Kolaborasi Transisi Energi di Kancah Internasional, Indonesia Cetuskan Program FIRE*. https://www.esdm.go.id

Ministry of Investment (BKPM). (2019). *Making Indonesia 4.0: Indonesia's Strategy to Enter the 4th Generation of Industry Revolution*. https://www.investindonesia.go.id

---. (2020). *Electric Vehicle Brochure*. https://www.bkpm.go.id

NAMA Facility. (2018). *Indonesia – Sustainable Urban Transport Program (SUTRI NAMA)*. https://www.nama-facility.org

OECD-IEA. (2022). *Fossil Fuel Support Database*. http://www.oecd.org/fossil-fuels/data

Oil Change International. (2022). *Shift the Subsidies Database*. http://priceofoil.org/shift-the-subsidies

Otoritas Jasa Keuangan. (2021). *Siaran Pers: Hadir di Pertemuan COP 26, OJK Tegaskan Komitmen Dukung Keuangan Berkelanjutan*. https://www.ojk.go.id

---. (2022). I*ndonesia Green Taxonomy Edition 1.0, 2022*. https://www.ojk.go.id

Rahman, N.F. (2021). I*ndonesia: Continued Commitment to the Development of Sustainable Urban Transport.* Changing Transport. https://changing-transport.org

Rogelj, J. et al. (2018). "Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development", in Masson-Delmotte, V. et al. (eds) *Global Warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C*. IPCC. https://www.ipcc.ch/

Romanello, M. et al. (2022). *The 2022 Report of The Lancet Countdown on Health and Climate Change*. https://www.thelancet.com/countdown-health-climate

Saputra, G and Simanjuntak, U. (2021). *The Need for Supportive Policy for the Indonesian Electric Vehicle Development*. https://iesr.or.id

Setyawan, D. (2020). *Energy Efficiency in Indonesia's Manufacturing Industry: A Perspective from Log Mean Divisia Index decomposition analysis*. https://doi.org/10.1186/s42834-020-00053-9

Subhan, A. (2018). *Indonesia Moves Towards Smart Buildings*. https://theaseanpost.com

Task Force for Climate-Related Financial Disclosures. (2022). *TCFD Supporters*. https://www.fsb-tcfd.org/supporters/

TransportPolicy.net. (2021). *Indonesia: Heavy-Duty Emissions* https://www.transportpolicy.net

United Nations. (2018). *World Urbanisation Prospects*. UN Department of Economic and Social Affairs, Population Division. https://population.un.org/wup

United Nations Development Programme (UNDP). (2020). *Human Development Index Database*. http://hdr.undp.org/en/data#

United Nations Framework Convention on Climate Change (UNFCCC). (2021). *Decision 1/CMA.3, Glasgow Climate Pact*. https://unfccc.int/documents/460950

The World Bank. (2021). *GDP Per Capita (constant 2015 US$)*. https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD

---. (2022). *Population, Total*. https://data.worldbank.org/indicator/SP.POP.TOTL

World Steel Association. (2021). *Steel Data and Statistics*. https://www.worldsteel.org/

Partners

Data Partners

Funders

Supported by:
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
based on a decision of the German Bundestag

Climate Transparency

This country profile is part of the Climate Transparency Report 2022. Find the Highlights Report and other G20 Member profiles at **www.climate-transparency.org**

For more information on this country profile, please contact:

Institute for Essential Services Reform (IESR)
Fabby Tumiwa, fabby@iesr.or.id